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6 August 56

MEMORANDUM TO: [REDACTED]

From: [REDACTED]

I wanted to give you a report on our latest developments and thinking on our personal equipment.

We have been aware for some time of the rapid deterioration of the glove bladder and inflation tube assembly, apparently from the effects of ozone, which is the heaviest concentration between altitudes of 60,000 to 100,000. It is fairly well recognized the hypolon and silicone are the most suitable rubber-like materials for use in an atmosphere of heavy ozone concentration; however, we have not been able to locate a source who consider it possible to produce gloves using this material. We have attempted to spray a hypolon finish over natural rubber, but this process was of questionable value. We now have a neoprene glove bladder, which is being installed in all gloves and shipped as spares. These resisted ozone concentrations for a period of 7 hours, as against 30 minutes with natural rubber used in previous gloves. The glove tube is also being made of ozone resistant neoprene and should be superior to previous tubes.

Our second most common failure in the glove unit is at the right angle bend in the inflation tube. We modified this by installing a restraining loop ahead of the elbow which takes the stress instead of the elbow itself.

A number of the men wearing the Altitude Suit have been dissatisfied with the fit of the suit. This we believe is due to two factors:

a. Most of these people have little experience with such suits and less capacity for indicating when the fit is satisfactory. We can only appraise the fit from the external point and must depend on the man himself to indicate if he is being subjected to mobility limitations, restrictions, or pressure points other than those inherent in such a garment.

b. Fitting procedure has been rather hurried because the personnel come into the factory in the morning and must leave by afternoon. This only allows us to have them wear the suit for about  $1\frac{1}{2}$  hours. This is inadequate for predicting what the suit will feel like during operational requirements.

We have also been working on the replacement of the face piece sealing rubber, which has been the most vulnerable part of the MA-2 Helmet Assembly. We now have a modification in which the face seal can be replaced without interfering with the complete bladder unit. The materials are just now available and we feel that we are close to a solution.

Since all of these units must be custom fitted and completed by hand, I do want to point out that more than the usual amount of time is required. We get a few squawks from the field occasionally on the time element, so I wanted you to understand what some of our problems have been and why some of our delivery dates have been off schedule.

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